



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,602	12/05/2003	Tsuyoshi Tanaka	GOTO.0007	7490
38327	7590	08/21/2007	EXAMINER	
REED SMITH LLP			LEE, CHUN KUAN	
3110 FAIRVIEW PARK DRIVE, SUITE 1400				
FALLS CHURCH, VA 22042				
			ART UNIT	PAPER NUMBER
			2181	
			MAIL DATE	DELIVERY MODE
			08/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Interview Summary

Application No.

10/727,602

Applicant(s)

TANAKA ET AL.

Examiner

Chun-Kuan (Mike) Lee

Art Unit

2181

All participants (applicant, applicant's representative, PTO personnel):

(1) Chun-Kuan (Mike) Lee (Examiner). (3) \_\_\_\_\_

(2) Yukiko Maekawa (Attorney Reg. # 50,307). (4) \_\_\_\_\_

Date of Interview: 14 August 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference  
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.  
If Yes, brief description: \_\_\_\_\_

Claim(s) discussed: 4, 11, 15 and 19-23.

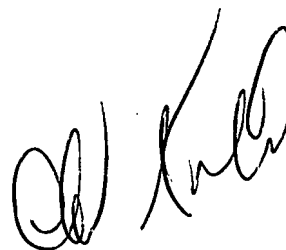
Identification of prior art discussed: None.

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Please see Continuation Sheet below.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.



ALFORD KINDRED  
PRIMARY EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

\_\_\_\_\_  
Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

#### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

##### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

##### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent and Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

#### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

The interview focused on the proposed amended claimed limitations for independent claims 4, 11 and 15, and the new dependent claims 19-23.

As per claims 4, 11 and 15, the discussion mainly focused on the clarification associated with the claimed limitations of "said first virtual machine" and "said second virtual machine;" the examiner attempted to clarify the above claimed limitations by demonstrating the correspondence of the above claimed limitations to the elements disclosed in Figure 10 of the Drawings.

As per claims 19-21, the discussion mainly focused on whether the new claims 19-21 are supported by the applicant's Specification and Drawings, wherein the examiner agrees that the dependent claims 19-21 are properly supported by applicant's Specification and Drawings.

As per claims 22-23, the discussion mainly focused on whether the new claims 22-23 are supported by the applicant's Specification and Drawings, wherein the examiner agrees that the new claimed limitation "wherein the system comprises a plurality of I/O devices" are properly supported by applicant's Specification and Drawings; but the remaining new claim limitations in dependent claims 22-23 may pose an issue of new matter.

No agreement was reached as a result from the interview.

**AGENDA OF THE INTERVIEW**

- 1) To propose the claim amendments including new claims
- 2) whether amended claims 4, 11, and 15 meet the requirements under 35 U.S.C. §112, first paragraph and second paragraph.
- 3) whether new claims 19-23 are sufficiently supported by page 9, line 1-11 of the specification.

**PROPOSED CLAIM AMENDMENTS**

1-3. (Canceled)

4. (Currently Amended) ~~[[The]]~~ A computer system according to claim 1, comprising:  
a plurality of virtual machines formed on a control program of a computer;  
an I/O device coupled with a PCI bus of said computer and shared among said  
plurality of virtual machines;  
a single port disposed in said I/O device and connected to said PCI bus;  
PCI connection allocating means for setting a state of logical connection  
between selected at most one of said plurality of virtual machines and said port at a  
time; and  
I/O device switching means for updating said state of logical connection set by  
said PCI connection allocating means according to a control signal received from said  
selected virtual machine,  
wherein said selected virtual machine changes said state of logical connection  
of said selected virtual machine to said I/O device according to a setting by said PCI  
connection allocating means,  
wherein in response to detection of occurrence of an error in said selected  
virtual machine, said selected virtual machine is deactivated, connection to said I/O  
device is switched to a standby virtual machine, said standby virtual machine is set as  
an active virtual machine, and said deactivated virtual machine is repaired and set as a  
standby virtual machine,  
wherein said plurality of virtual machine comprises comprise first and second  
virtual machines,  
wherein said first second virtual machine sends to said control program a  
command to switch a state of logical connection of said first virtual machine to said  
I/O device, said first second virtual machine sends to said control program a  
command to deactivate or activate said first virtual machines machine upon detecting  
occurrence of an error in said second first virtual machine, and said control program  
capable of deactivating or activating a deactivates or activates said first virtual  
machine with respect to said control program in response to said command being  
received,

wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said ~~second~~ first virtual machine according to a control signal received, in response to said PCI connection allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said ~~second~~ first virtual machine, said ~~second~~ first virtual machine changes connection to said I/O device, and

wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low.

5-10. (Canceled)

11. (Currently Amended) [[The]] An I/O device coupled with a PCI bus of a computer, according to claim 9, further comprising:

a single port connected to said PCI bus;

signal generating means for generating an interruption signal used to change a state of logical connection of said port according to a control signal received from said computer;

an operating system performing hot-add/remove processing of said I/O device in response to said interruption signal running on said computer, and

an allocating means for setting said state of logical connection of said port, wherein said computer, when receiving said interruption signal, changes a state of logical connection of said computer to said port,

wherein in response to detection of occurrence of an error in a virtual machine, said virtual machine is deactivated, connection to said I/O device is switched to a standby virtual machine, said standby virtual machine is set as an active virtual machine, and said deactivated virtual machine is repaired and set as a standby virtual machine,

wherein said signal generating means generates [[an]] said interruption signal and updates said allocating means for setting said state of logical connection of said port,

wherein ~~said first~~ a second virtual machine sends to said control program a command to switch a state of logical connection of a first virtual machine to said I/O device, said ~~first~~ second virtual machine sends to said control program a command to deactivate or activate said first virtual machines machine upon detection of occurrence of an error in said second first virtual machine, said control program ~~capable of deactivating or activating a~~ deactivates or activates said first virtual machine with respect to said control program in response to said command being received,

wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said ~~second~~ first virtual machine according to a control signal received, in response to said PCI connection allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said ~~second~~ first virtual machine, said ~~second~~ first virtual machine changes connection to said I/O device, and

wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low.[[.]]

12-14. (Canceled)

15. (Currently Amended) ~~[[The]]~~ A method according to claim 13, for sharing an I/O device coupled with a PCI bus of a computer among a plurality of virtual machines formed on a control program of said computer, comprising the steps of:

selecting at most one virtual machine among said plurality of virtual machines at a time;

enabling said I/O device to set a state of logical connection between said selected virtual machine and a single port of said I/O device connected to said PCI bus through said single port;

changing said state of logical connection between said port and said selected virtual machine according to a control signal received from said selected virtual machine;



in response to detection of occurrence of an error in said selected virtual machine, deactivating said selected virtual machine; then,  
switching connection to said I/O device to a standby virtual machine;  
setting said standby virtual machine as an active virtual machine; and  
repairing said deactivated virtual machine, and  
setting the repaired deactivated virtual machine as a standby virtual machine,  
wherein said computer includes first and second virtual machines formed therein,

wherein said step of changing said state of logical connection includes the steps of, when detecting error occurrence in any of said plurality of virtual machines, updates updating an allocation table for setting said a state of logical connection between said port and each virtual machine, lets letting said error-detected virtual machine stand by and activate activating another virtual machine,

wherein said first second virtual machine sends to said control program a command to switch a state of logical connection of said first virtual machine to said I/O device, said first second virtual machine sends to said control program a command to deactivate or activate said first virtual machines machine in response to detection of occurrence of an error in said second first virtual machine, said control program capable of deactivating or activating a deactivates or activates said first virtual machine with respect to said control program in response to said command being received,

wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said second first virtual machine according to a control signal received, in response to said PCI connection allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said second first virtual machine, said second first virtual machine changes connection to said I/O device, and

wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low.

16-18. (Canceled)

19. (New) The computer system according to claim 4, wherein the I/O device is a disk unit.
20. (New) The I/O device according to claim 11, wherein the I/O device is a disk unit.
21. (New) The method according to claim 15, wherein the I/O device is a disk unit.
22. (New) The computer system according to claim 4, wherein the system comprises a plurality of I/O devices, said logical connection of said selected virtual machine to an I/O device among the plurality of I/O devices is switched to another I/O device among the plurality of I/O device, and said logical connection of said selected virtual machine to the I/O device among the plurality of I/O device is not switched to another I/O device among the plurality of I/O device when the selected virtual machine is switched.
23. (New) The method according to claim 21, wherein the PCI bus is coupled with a plurality of I/O devices, said logical connection of said selected virtual machine to an I/O device among the plurality of I/O devices is switched to another I/O device among the plurality of I/O device, and said logical connection of said selected virtual machine to the I/O device among the plurality of I/O device is not switched to another I/O device among the plurality of I/O device when the selected virtual machine is switched.